

Utah Department of Transportation



Purple Book Scoping and Development Process Guidelines

February 2007

Introduction

The Purple Book process is a subset of the 3R Guideline. It addresses only the first “R”, Resurfacing for asphalt pavements or work of similar scope and function for concrete pavements. The Purple Book process does not supersede any part of the 3R Guideline or its technical requirements, including design exceptions. The scope of a Purple Book project is intentionally limited to addressing only the pavement surface. Work items are limited to pavement resurfacing and other work that is necessitated by that resurfacing. The project scope is defined in advance and road sections are found that fit the scope. This is the reverse of the usual approach of identifying a project location and then developing a project scope based on what the needs are at that location. A number of benefits are realized by predefining the project scope in this manner, including:

1. Project development can be accelerated. The Concept Development (CD) phase of the STIP is bypassed, eliminating the need to guess the pavement condition 3-4 years into the future.
2. Limited scope allows for quick construction, normally 3-4 weeks.
3. Pavement life is extended. The Pavement Life Strategy calls for intermediate structural overlay treatments at certain critical times in the life cycle of the pavement. The Purple Book is a proactive approach ideally suited to these intermediate treatments.
4. Preventive maintenance funds are used for preventive maintenance not for structural improvements or other corrective measures.
5. Project cost is reduced by performing the corrective treatment before the pavement deteriorates and more extensive rehabilitation is required.
6. The construction program can be more easily obligated. Purple Book projects can be used to fill holes in the construction program created when unforeseen circumstances prevent other projects from being built or other projects cost less than originally anticipated.
7. The project stays within its original scope.
8. PE and CE costs can be greatly reduced by 5-6 percent and in some cases even lower.

CD
PME
PMT
OSR

Development Process

Identify Projects Based on Scoping Criteria

Responsibility: **Region Pavement Management Engineer**

The Region Pavement Management Engineer (PME) identifies 10-15 potential projects each year based on the principles and scoping criteria outlined below.

Principles:

1. Minimal engineering effort is required except for the pavement.
2. Environmental clearance is Categorical Exclusion, Level II.
3. Need is based solely on a pavement purpose.

Scope:

The intent and purpose of the Purple Book project is to address the pavement. Other items of work may be included as necessary by the pavement resurfacing and in keeping with the principle of minimal engineering effort.

A Purple Book project includes:

1. Maximum 5 inch rotomilling, for example removal of up to two open graded seals plus removal of 3 inch dense graded mix.
2. Maximum 4 inch total resurfacing, for example 3 inch dense graded mix plus 1 inch open graded seal.
3. Grinding, load transfer retrofit, or limited full depth slab repairs for concrete pavements.
4. Installation of ADAAG compliant curb ramps.
5. Adjustment of existing features affected by the resurfacing, such as monuments, catch basins, and manhole covers.
6. Repair or replacement of signal detection and traffic counting loops.
7. Minimum required safety features as recommended by the Operational Safety Report (OSR).
8. Bridge preventive maintenance activities for the deck and riding surfaces of bridges carrying the project and within the project limits. Eligible activities may include rotomilling, pothole patching, membranes, overlays, and concrete sealants.
9. No horizontal or vertical realignment.
10. No driveway relocation.
11. No storm drain system improvements including curb and gutter.
12. No major bridge rehabilitation.
13. No signal work except detection loop replacement.
14. No utility involvement except raising manholes.

The Region PME will participate in semiannual inspections to help identify potential projects. Inspections will help determine:

1. Pavement is in Fair or Good condition.
2. Pavement Life Strategy indicates an upcoming need and shows in the Plan For Every Section.
3. Minimal fatigue cracking.
4. Minor or moderate rutting.
5. Environmental cracking that does not penetrate too deeply.
6. No deep level stripping.

Some of the tools used to identify projects include:

1. Detail Data Sheets
2. FWD data
3. dTIMS list of recommended projects
4. Public and transportation partner comments

Refine the List of Candidate Projects

**Responsibility: Region Pavement Management Team
 (Region Engineering Team)**

The list of potential projects created by the Region PME is considered by the Region Pavement Management Team (PMT) and refined based on the following issues.

1. **The need for operational or safety improvements.** All projects require an OSR. The Region PMT requests an OSR from the Traffic and Safety Division and reviews it before determining if the project will be developed as a Purple Book project. The OSR includes both an accident record review and a safety field review. The Traffic and Safety Division will specify required safety features required in a Purple Book project.
 - a. Install or replace rumble strips.
 - b. Eliminate pavement edge drop-offs.
 - c. Adjust barrier and guardrail height as necessary due to resurfacing.
 - d. Upgrade guardrail terminals, barrier terminals, and bridge ends.
 - e. Install ADAAG compliant curb ramps.

The OSR will also contain other safety recommendations. These additional recommendations will include an anticipated benefit/cost ratio that must be addressed by including them with the project or some other means. The Region Project Manager (PM) and the Engineer for Traffic and Safety will decide which additional safety recommendations to include in the project based on benefit/cost ratios, accident history, available budget, and the goal to preserve pavements. A plan must be developed to address the remaining additional safety recommendations. These recommendations can be incorporated into an upcoming STIP project, accomplished with Maintenance forces, or addressed with a separate safety project that is brought into the STIP planning process. Some recommendations may require no action. The Region Director will send a memo to the Engineer for Traffic and Safety to describes how each OSR recommendation not part of the Purple Book project will be addressed, prior to moving it into a funded year. The Traffic and Safety Division will monitor that commitments made

in the memo are followed and completed. The Design Exception process must be followed for all Purple Book projects.

2. **The extent of the pavement solution.** The project may not qualify as a Purple Book if it expands beyond simple resurfacing or upon further pavement investigation reveals deep level stripping. A Blue Book project may be more appropriate.
3. **The bridge preventive maintenance requirements within the Purple Book project.** The Region PMT requests a Structures Recommendation Report from the Structures Division prior to moving the project into a funded year. The report will identify the preventive needs of all the bridges within the project limits. The PMT or PM discuss the preventative bridge work with the Structures Division. Bridge decks that carry the project need to be addressed and the deck work limited to pothole patching, a membrane, or an overly. Bridge deck replacements will normally not be included with Purple Book projects. Bridge Preventive Maintenance funds and Purple Book project funds may be combined.
4. **The level of environmental clearance required.** If the need to address the additional safety recommendations or other project complications eliminates the project from the Categorical Exclusion Level II, a Purple Book process would no longer be appropriate.
5. **The Region STIP planning process.** The Region PMT must evaluate each Purple Book project in the context of long range corridor plans and programmed STIP projects. This may reveal other conditions not foreseen by the Region PME that would lead to delaying or eliminating the Purple Book project.

Projects removed as Purple Book candidates during this process should be further developed based on 3R Standards. The final list of Purple Book candidates is prioritized by the Region PMT and brought forward for consideration at the Region STIP Workshop.

Add Purple Book Projects to the STIP

Responsibility: Region Engineering Team and Program Development

At the January Region STIP Workshop, projects from the final Purple Book candidate list are considered along with projects from the CD list for placement on the STIP, generally for the third funded year. The CD phase is bypassed because the project scope is already defined. Project placement is based on priority and available funding. Projects can be funded with either federal or state funds. Using federal funds for Purple Book projects saves state funds for the Orange Book program. Purple Book projects should compete with capacity improvement, major rehabilitation, or reconstruction projects if they compete with other projects for funds, not preventive maintenance. An ideal situation would be to set money aside in each of the three funded STIP years for pavement resurfacing at locations to be determined. The Purple Book projects would define those locations and be funded with that money.

Project Design, Advertising, and Construction

Responsibility: Project Manager and Region Pavement Management Engineer (Pavement Design)

Pavement design is performed by the Region PME. This is the major activity in the design phase and requires the most engineering effort. In most cases that effort is reduced compared to more complex projects. For example, coring will be done to support the pavement design but may be reduced to as little as 20 percent of what is normally done.

Roadway design activities consist of selecting standard bid items, writing special provisions, compiling summary sheets for quantities, preparing the Engineer's estimate, and Measurement and Payment document. Project plans consist of a location map (location referencing will generally be done by means of reference posts, not stationing), typical sections or detail sheets, and 8½x11 inch plan sets to include in the advertising package.

Other Considerations

As mentioned, the ideal situation would be to allow for money to be set aside for Purple Book projects in each of the three funded years on the STIP. That will generally not be the case. Projects will be added to the third funded year. Proceed with the design process as if the project will be built in the first funded year because the simplified scope for a Purple Book project allows for quick project development time. Purple Book projects can be moved forward due to delays or savings on other projects creating flexibility on the STIP.

Purple Book Process Flow Chart and Time Line

